2012

# Personal Protective Equipment

CHINOOK
Drilling Inc.

Chinook Drilling

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## 102.0. Personal Protective Equipment (PPE)

Chinook Drilling will ensure that it provides appropriate skin, hand, and foot or body protection if a worker is exposed to a substance or condition which is likely to puncture, abrade or otherwise adversely affect the skin, or be absorbed through it.

If there is a danger of injury, contamination or infection to a worker's hands, arms, legs, or torso, Chinook Drilling Employees must wear properly fitting protective equipment appropriate to the work being done and the hazards involved.

Personal protective equipment has saved lives and prevented many serious injuries.
A program aimed at preventing injuries must set minimum standards relating to protective equipment and the required use of this equipment.

Rig managers and their drillers must set the examples and exercise their authority to enforce the use of protective equipment.

PPE reduces the consequences of workers' exposure to various worksite hazards. It is always preferable to eliminate hazards, however this cannot always be done and PPE must be worn. All workers must wear personal protective and safety equipment where danger of personal injury exists.

No person (including representatives of management, office visitors, the public, inspectors, clients, or contractors) is allowed on Chinook Drilling worksites without appropriate safety equipment. Chinook Drilling will ensure all PPE is available and all employees and contractors are proficient in their use. All employees, contractors and visitors will be trained in the proper use, fitting, cleaning, maintenance, and storage of PPE.

If the use of personal protective equipment creates a hazard that is greater than or equal to the hazard it is protecting the employee from, an alternative means of protection must be used.

Standard PPE is required at all Chinook Drilling worksites, however it is important workers use good judgement in obtaining necessary specialized equipment to protect themselves and others against hazards associated with their job.

Employees are required to inspect the personal protective equipment before using it, and do not use personal protective equipment that is unable to perform the function for which it is designed, any malfunctioning equipment must be reported immediately to a supervisor, along with details of the defect or malfunction. Any malfunctioning equipment shall be replaced immediately by Chinook Drilling. Care must be taken to ensure that the use of personal protective equipment does not endanger the employee; it must be maintained in good working order and in a sanitary condition.

The minimum personal protective equipment on any active Chinook Drilling worksite will be:

- CSA approved hard hat (as provided by Chinook Drilling)
- CSA approved eye glasses
- fire retardant  coveralls gloves appropriate to work conditions
- CSA approved protective footwear

Chinook Drilling will supply all other personal protective equipment, which may be required, at no cost to the employee.

All present on the drilling rig will wear C.S.A. approved safety toed boots. In sub zero weather these boots will be insulated to reduce the risk of frostbite. Neoprene soles have been found to provide the best possible traction, and are encouraged on both winter and summer boots.

Boots must be fully laced and secure

- Pant and or coverall cuffs must extend over boots (not tucked in)

## 103.0. Head Protection

When working on an active site, or where an overhead or lateral hazard exists or danger of head injury from flying, falling or thrown objects; the employee must wear the supplied approved hard hat.  Bump hats are not allowed.  The employee must wear the hard hat prior to entering the active site and continue to do so until the entire work process has been completed.  Hard hats are to be removed only when the employee has left the active site.

If it is impractical for the employee to wear a hard hat during the work process, Chinook Drilling will ensure that the employee's head is protected using an adequate alternative means of protection while continuing the work process.

Hard hats must meet the following criteria.

- Meet current CSA standards (CSA Z94.1-M1977).
- Be kept clean and visually inspected daily for cracks, flaws or deterioration, and discarded if found to be defective.
- Be worn with a properly adjusted suspension system.
- Not be painted, drilled, or modified in any way.

- All hard hats are to be removed from service no more than 5 years after the original manufacture date, or sooner if the headwear has been damaged, structurally modified, suffered a severe impact, painted, or cleaned with solvents.

## 104.0. Eye and Face Protection

Eye protection is mandatory and must be worn at all times while on a Chinook Drilling location. Wearing contact lenses while working on drilling rigs is not recommended as foreign objects, chemicals or burns to the eye could destroy the lens, thereby increasing the severity of the injury. Safety eyewear must meet the requirements of CSA Standard *CSA-Z94.3-M1982*. Safety goggles, safety glasses or a face shield will be worn when:

- Working on or around compressed air or steam hoses.
- Working with cleaning solvents.
- Handling acid or chemicals in liquid or powder form.
- Draining or breaking joints on any pressure vessel, line or equipment.
- Chipping, grinding or drilling with hand, pneumatic or electric tools.
- Buffing or wire brushing with hand or power equipment.
- Performing any kind of pressure test.
- Lighting boilers, fire tubes or examining fires within each.
- Using hammer or cold chisels, centre punches or other impact tools.
- Working on any hot equipment, or when assisting a welder, as a protection against flash, approved coloured safety goggles will be worn.
- Working on or testing electrical equipment energized at a potential greater than 30 volts.

In the unlikely event a worker's eyes are exposed to harmful chemical, emergency eyewash stations are available at all Chinook Drilling facilities.

Each Rig shall have an ample supply of anti-fog type mono-goggles and face masks in place at all times.

- Two pair in doghouse.
- One pair at the mud hopper.
- One face shield at the grinder location.

Goggles and face shield must be used while mixing corrosive chemicals.

Face shields must be used when;

- Using grinders,
- When changing tong dies.

Eye protection must be kept in a serviceable condition at all times - clean and free from cracks.

If eye glasses are worn for corrective vision, safety lenses (hardex or plastic) are strongly recommended.

## 105.0. Hearing Protection

Educating workers in protecting themselves from exposures to excessive noise, both on the job and in leisure time pursuits, is an important aspect of a hearing conservation program. Hearing protection is necessary because exposure to even moderately high levels of continuous noise can damage hearing permanently. The effects are often not immediately apparent, but may take years to become obvious.

All workers using a hearing protection device must be trained in its proper use, and have an understanding of its limitations.

Hearing protection is provided for all employees on Chinook Drilling rigs and must be worn by employees in accordance with the following tables:

Schedule 3 Noise
Table 1 Occupational exposure limits for noise

| Exposure level (dBA) | Exposure duration |
|---|---|
| 82 | 16 hours |
| 83 | 12 hours and 41minutes |
| 84 | 10 hours and 4 minutes |
| 85 | 8 hours |
| 88 | 4 hours |
| 91 | 2 hours |
| 94 | 1 hour |
| 97 | 30 minutes |
| 100 | 15 minutes |
| 103 | 8 minutes |
| 106 | 4 minutes |
| 109 | 2 minutes |
| 112 | 56 seconds |
| 115 and greater | 0 |

**RIG LOCATION SAMPLE:**

| Sound Level (dba) | Maximum Exposure Duration | Area EXAMPLE |
|---|---|---|
| 80 | 16 hrs | BOP/Substructure |
| 85 | 8 hrs | Doghouse |
| 91 | 2 hrs | Floor |
| 94 | 1 hrs | Driller Position |
| 100 | 15 min | Light Plant |
| 106 | 4 min | Rig Motor |
| 109 | 2 min | Mud Pump |
| 115 | 0 min | SCR Rig Motors |

Table 2 Selection of hearing protection devices

| Maximum equivalent noise level (dBA $L_{ex}$) | CSA Class of hearing protection | CSA Grade of hearing protection |
|---|---|---|
| ≤ 90 | C, B or A | 1, 2, 3, or 4 |
| ≤ 95 | B or A | 2, 3, or 4 |
| ≤ 100 | A | 3 or 4 |
| ≤ 105 | A | 4 |
| ≤ 110 | A earplug + A or B earmuff | 3 or 4 earplug + 2, 3, or 4 earmuff |
| > 110 | A plug + A or B earmuff and limited exposure time to keep sound reaching the worker's ear drum below 85 dBA $L_{ex}$ | 3 or 4 earplug + 2, 3, or 4 earmuff and limited exposure time to keep sound reaching the worker's ear drum below 85 dBA $L_{ex}$ |

| OCCUPATIONAL EXPOSURE TO IMPULSE NOISE | |
|---|---|
| **Peak Sound Pressure Level (dba)** | **Maximum Permitted Impulses / 8 hr day** |
| 120 | 10,000 |
| 130 | 1,000 |
| 140 | 100 |
| 140+ | 0 |

A box of disposable type earplugs will be kept in the doghouse and change shack of all rigs.

## 106.0. Work Boots

CSA approved work boots must be worn at all times by anyone entering operating or field areas and Chinook Drilling yards when performing work. All CSA certified safety boots are labelled on each boot and carry the green CSA triangle. This symbol indicates the safety boots meet the CSA Z195-M1984 standard.

## 107.0. Clothing

Only clothing suitable for the job and worksite may be worn. Loose, ragged or torn clothing must not be worn when working around rotating or moving machinery or equipment.

Employees are to wear the supplied fire resistant coveralls at all times, whether working in the yard or on a contractors' worksite. This is part of the Personal Protective Equipment all field employees are required to wear. The supplied coveralls are highly visible apparel that meets type 3 criteria of WCB Standard Personal Protective Equipment Standard 2-1997.

The coveralls also ensure that the employee's skin is protected from natural elements or a harmful substance that may injure the skin on contact or may adversely affect their health if it is absorbed through the skin. Coveralls will protect the employees' skin from sparks, molten metal or radiation. Properly fitted hand, arm, leg and body protective equipment that is appropriate to the work will help to protect the employee from job site hazards.

An employee must ensure clothing worn beneath flame resistant outerwear and against the skin is made of flame resistant fabrics or natural fibres that will not melt when exposed to heat. Employees must wear underclothing made of cotton, wool, or silk blends. The fabric should have a smooth, tightly woven finish.

Employees will not wear clothing made of nylon, polyester, acetate, or acrylic fibres. These fabrics are moderately flammable and will melt while burning and cause deep and extensive burns to the skin.

Employees should avoid laminated fabric containing polyurethane sponge, as this ignites and burns quickly. Many synthetic materials do not char or ash when they reach ignition temperatures. Rather, they melt and form a hot, tacky residue which sticks to the skin and burns the flesh.

As there is a possible danger of contact with moving parts of machinery or with electrically energized equipment, the clothing of the employee must fit closely about the body.

In the unlikely event a worker's coveralls or skin is exposed to a harmful chemical, rendering the garment unfit for wear, the worker must do the following.

- Replace the contaminated coveralls with a clean pair.
- Avoid any activity where a spark or open flame may be created or exists.
- The soiled coveralls will be professionally cleaned and decontaminated once they return to their facility.
- Wash the contaminated skin at the earliest possible time.

## 108.0. Appropriate Work wear for Fire and Explosion Hazards

Appropriate clothing will reduce the severity of burn injuries in the event of flash fires and explosions. The hazards referred to are those of **incidental** and **short exposure** to sudden fires.

Clothing that is appropriate should have the following characteristics:

- High Level of Flame Resistance - should not ignite easily or continue to burn.
- Fabric Integrity - It should not melt, but rather should provide a barrier or insulating layer against exposure to fire.
- Anti-Static Properties - The fabric **should not act as an ignition source**, i.e.: static electricity.

**Inappropriate clothing around fire and explosion hazards includes untreated or light cottons, polyester, nylon and poly/cotton blends. (Nylon is particularly bad)**

Appropriate clothing includes fabrics with flame-resistant characteristics which fall into the following four categories:

- Fabrics typically treated with a flame-retardant finish (examples are Zipro, Wool, Proban Cotton, Pyrovatex Cotton and FR treated Rayon/Danufil).
- Chemically treated fabrics (examples are Proban, Firotex, Panotex, and Sigratex.)
- Inherently flame resistant fabrics (examples are Kevlar, PBI, Nomex III, and Nomostat.)
- Naturally flame resistant fabrics (examples are wool and leather.)

### 108.1. Worker Education and Training

The Chinook Drilling clothing policy will be enforced through the company safety program using new employee orientation, weekly safety meetings, and on-going written communications. The rig manager and driller will ensure that all rig employees are made aware of the hazards and hazardous conditions associated with wearing flammable clothing or clothing which melts when exposed to heat.

## 109.0. Gloves

Gloves must be worn appropriate to the work being done and the nature of the hazard involved, such as pure rubber or neoprene gloves for handling corrosive or toxic chemicals; cotton, wool, or leather gloves for routine work.

### 109.1. Impact Glove Program

With the continued impact of hand injuries on our employees we will be taking a proactive approach to reducing major or minor hand injuries on all locations. Since our business operations encompass a high amount of manual handling and equipment operations where hand injuries could occur on a regular basis. In order to reduce the severity or eliminate numerous injuries, Chinook has implemented an impact glove program to contribute to reduction of these injuries. This is not a 100% solution to elimination of severe hand injuries or complete elimination of the injuries. If all employees continue to use this protective equipment along other safe practices in daily operations, we can increase our level safety on every Chinook location and ensure added protection to employees.

Active participation and feedback will continue to improve this and all programs. Comments and questions will be directed to Rig Managers and safety department for further information.

The following information outlines the details of the program.

### 109.2. Requirements

Employees will be required to wear the provided gloves in areas and operations with the highest possibility of injury to hands and fingers. These operations could include rig floor activities, nipple up/down, tubular handling, working on mud pumps, etc. Details and requirements will be outlined in JSA's and procedures manuals.

### 109.3. Distribution

Chinook will supply (1) pair to each field employee every (2) months. They will be provided from the rig manager at each location.

If pairs are damaged or lost by employee negligence, the replacement pair will be payroll deducted.

Orders will be requested into operations center by the rig manager every (2) months. Orders will be placed by either the Office Administrator or HSE Coordinator.

## 110.0. Derrick Safety Belts and Lanyards

Fatalities and multiple injuries continue to occur in the drilling industry because workers fail to use the equipment provided to prevent falls from the derrick. Subsequent investigation of some of these accidents indicates forgetfulness or overconfidence on the part of the victim. Do not become a casualty by failing to use the equipment provided to prevent this unnecessary waste of human life.

- All employees who are required to work three meters or more above the derrick floor shall wear a Class III body harness (safety belt complete with shoulder straps) secured at all times by means of a lanyard to a suitable fixed anchor point & a shock absorber.

This includes:

- When latching elevators to tall stands
- When recovering a stand that has fallen across the derrick
- The lanyard must be made of material capable of withstanding the shock load that may be applied to it, and protected by padding if attached to material with sharp edges.
- The fixed anchor point must be capable of withstanding the shock load which may be applied to it and must not be the same anchor point used for tying back the stands of drill collars or drill pipe.
- Only CSA-approved safety belts and lanyards may be used.

All Chinook Drilling, rigs must have a minimum of two derrick belts, one of which may be a combination climbing assist/derrick belt and one tank belt.

The combination climbing assist/derrick belt or a standard derrick belt is to be kept in the doghouse when not in use.

The derrick belt(s) are to consist of a waist strap, shoulder straps, and a “D” rig built into the back of the belt. A 15” lanyard must be BRAIDED into the “D” ring. The other end of the lanyard must be braided into an eye.

The climbing assist harness is to consist of a waist strap and a bottom strap with a metal eye on each end to attach to the man lift ladder hooks.

A combination climbing assist/derrick belt consists of a derrick belt with an 8 ft. lanyard braided in as above. In addition it has a bottom strap, complete with metal eyes at the ends to attach to the man lift ladder hooks. This design is useful for derrick tasks such as bridling up, as it eliminated the need to employ two belts to complete one task.

Field modifications are not permitted on any of the derrick belts or the climbing assist harness.

As per OH & S regulations, if climbing a derrick ladder a climbing assist or fall arrest device must be employed. Where it is possible to fall more than 3.0 meters from a temporary work area, a safety belt must be worn.

## 111.0. Fall Arresting Device

In compliance with Part 9 of OH&S regulations, an approved fall arresting device capable of meeting the applicable code requirements shall be provided for climbing and descending the derrick ladder.

When a fall arrest with the retract line mechanism is utilized, an endless rope attached to the fall arrest cable, through a sheave on the floor hand rail is suggested for retrieving the cable when required for use. Allowing the cable to spool up into the drum also protects it from damage and the elements.

Every person, **WITHOUT EXEPTION**, is required to use a climbing assist or fall arrest device attached to an approved safety belt when climbing or descending the derrick ladder.

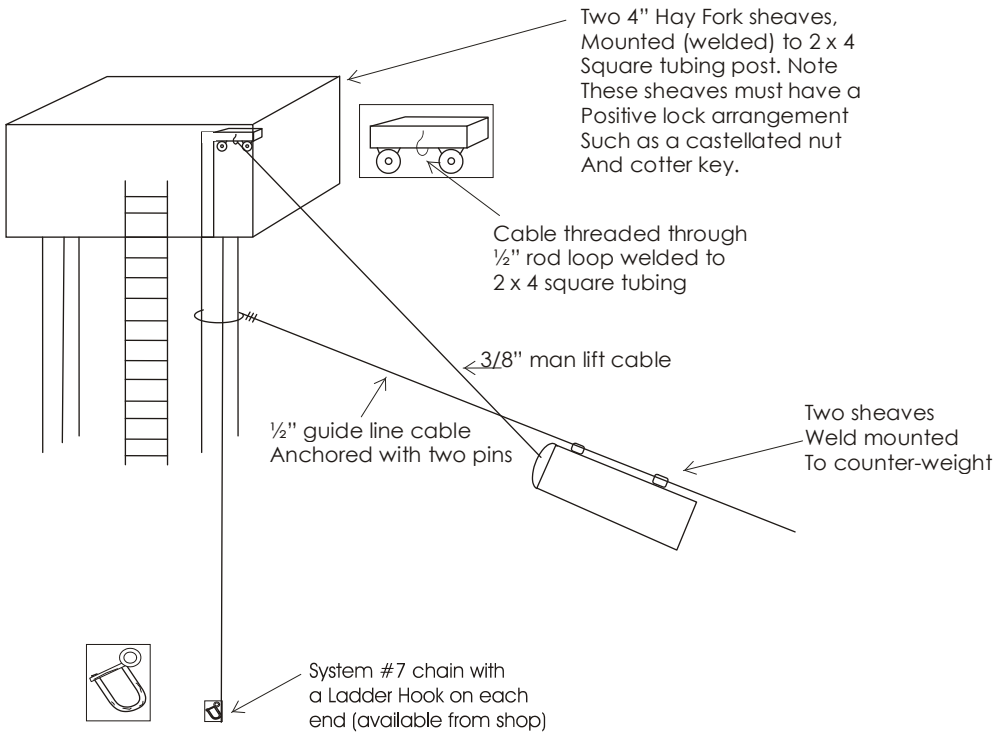
## 112.0. Fall Arresting Device - Design Standard

All Chinook Drilling, rigs shall be equipped with a fall arrest device, consistent with OH&S Safety regulations.

The fall arrest device must be rigged operational immediately after the derrick is raised, on rig up.

The fall arrest device must be kept in good repair and inspected weekly, by a competent worker.

Where a man lift is in use, the man lift be fabricated, installed and maintained to the following minimum standard.



## 113.0. Auxiliary Escape and Anchors

A safe convenient auxiliary means of escape shall be provided from the Derrickman's principal working platform. Chinook Drilling employs two types of escape devices. The Derrickman must be knowledgeable and competent with the device being used.

- A Geronimo or Buggy
- A Control Decent Device

### 113.1. Geronimo or Buggy Line

The Geronimo or Buggy line must be a specially rigged and securely anchored line as an auxiliary means of escapes which:

- provides a ready means of escape from the principal working platform above the drill floor,
- consists of a wire rope not less than 13 mm (1/2 in) diameter,
- has a length twice the vertical distance between the ground and the point at which it is attached to the derrick
- is effectively anchored and able to withstand a load of 13.3 kN (3,000 lbs), and
- Is kept free of obstructions.
- Equipment must not be placed, and vehicles must not pass, under the last 15 m (50 ft) of the escape line.
- A CSA approved safety buggy must be installed and operated on the escape line
- The safety buggy must be:
- kept at the derrick hand's principal working platform,
- provided with an effective brake and means to prevent the trolley from coming off the escape line
- Inspected by a qualified person at least once a week.
- The escape line must be tensioned so that a worker seated in the safety buggy will touch the ground at a safe distance from the derrick, not less than 6 m (20 ft) from the ground level anchor.

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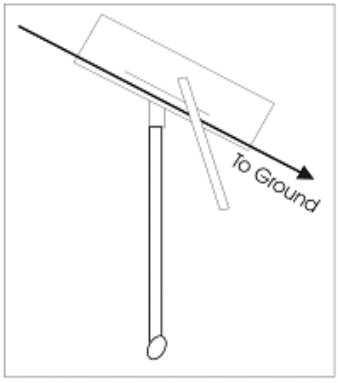
# INSTALLATION

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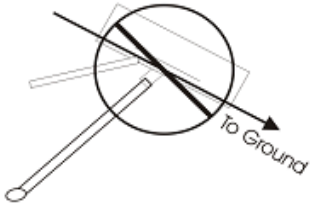
WRONG

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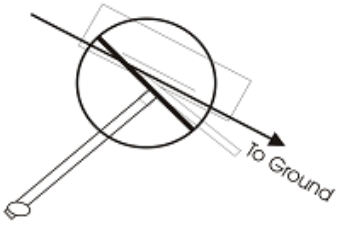
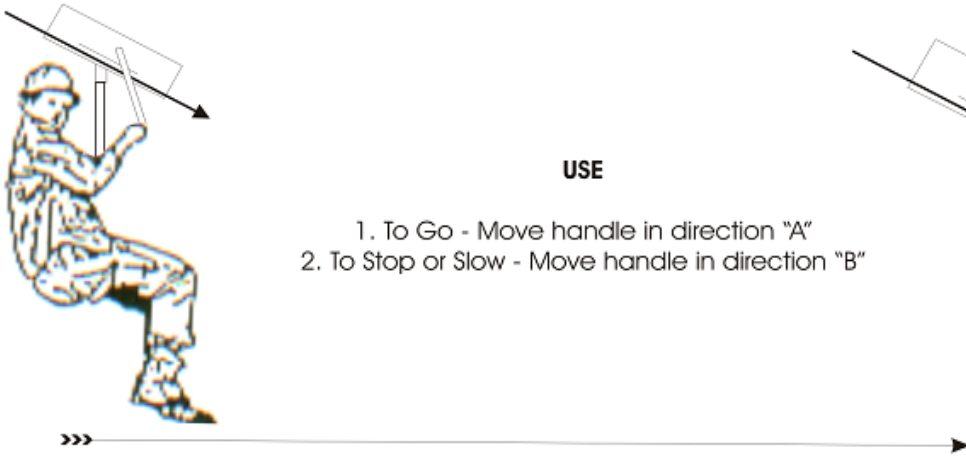
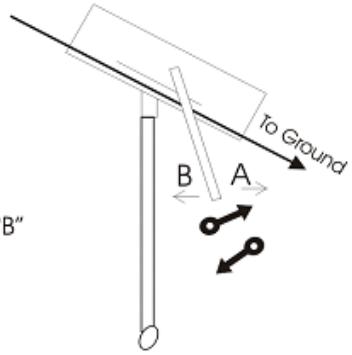
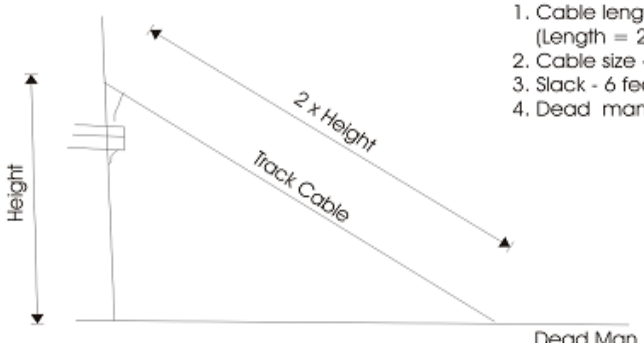


**USE**

1. To Go - Move handle in direction "A"
2. To Stop or Slow - Move handle in direction "B"




1. Cable length should be twice the height (Length = 2 x height)
2. Cable size - 7/16" or 1 / 2" Plow standard six strand
3. Slack - 6 feet of sag
4. Dead man must be able to support a cable pull of 3,000 lbs.

CAUTION:
Do not attempt to field repair when worn or damaged. Dispose of and replace

## 113.2. Emergency Descent Device

The Emergency Descent Device is intended to be used as a component of an emergency escape system to provide a means of controlled descent from an elevated structure. The Guide Cable Sleeve and Suspension Bar Kit is used to attach the Emergency Descent Device to a guide cable, and should be used for applications where it is necessary to direct the user to a specific landing area, or when the user must be held stable during the descent (i.e. windy conditions).

### 113.2.1. Capacity

This equipment is designed for use by persons with a combined weight (including tools, clothing, body support, etc.) of 75 lbs. to 310 lbs.

**Descent Speed**
The speed at which the user will be lowered when using the Emergency Descent Device increases with the combined weight of the user. For vertical descents the approximate descent speeds are as follows:

- 120 lbs. Combined Weight: 6.8 feet/second
- 220 lbs. Combined Weight: 8.8 feet/second
- 300 lbs. Combined Weight: 10.0 feet/second

When using the Emergency Descent Device with a guide cable, the descent speed of the user will decrease as the slope of the guide cable decreases.

### 113.2.2. Compatibility of Connectors

Connectors (hooks, carabineers, D-rings) used to suspend the Emergency Descent Device must be capable of supporting at least 3,100 lbs. Connectors must be compatible in size, shape, and strength.

Non- compatible connectors may unintentionally disengage (roll-out). Roll-out occurs when interference between the connector and anchorage connector causes the hook or carabineer gate to unintentionally open and release. Self locking snap hooks and carabineers must be used with this system to reduce the possibility of roll-out. Do not use connectors that will not completely close over the attachment element.

### 113.2.3. Anchorage Strength for Emergency Descent Device

Anchorages used to suspend the Emergency Descent Device must sustain static loads, applied along the axis of the device, of at least 3,100 lbs. When more than one Emergency Descent Device is attached to an anchorage the strengths stated above must be multiplied by the number of descent devices attached to the anchorage. Anchorages used to support a

guide cable, when applicable, must be sufficiently strong to withstand the forces generated in the guide cable during descent.

### 113.2.4. Guide Cable

Applications with a sloped descent require a guide cable. Systems requiring a guide cable must be designed by a qualified person. The angle, at which the guide cable is secured, as well as the amount of sag in the guide cable, will affect the descent speed. The guide cable must be installed with sufficient slope and limited sag to ensure the user will reach the landing area in the event of an emergency descent. The guide cable and the anchorage point must support the weight of the user in a descent. Guide cable must be 3/8 inch to 5/8 inch wire rope.

**Figure 2**

Installation Configurations

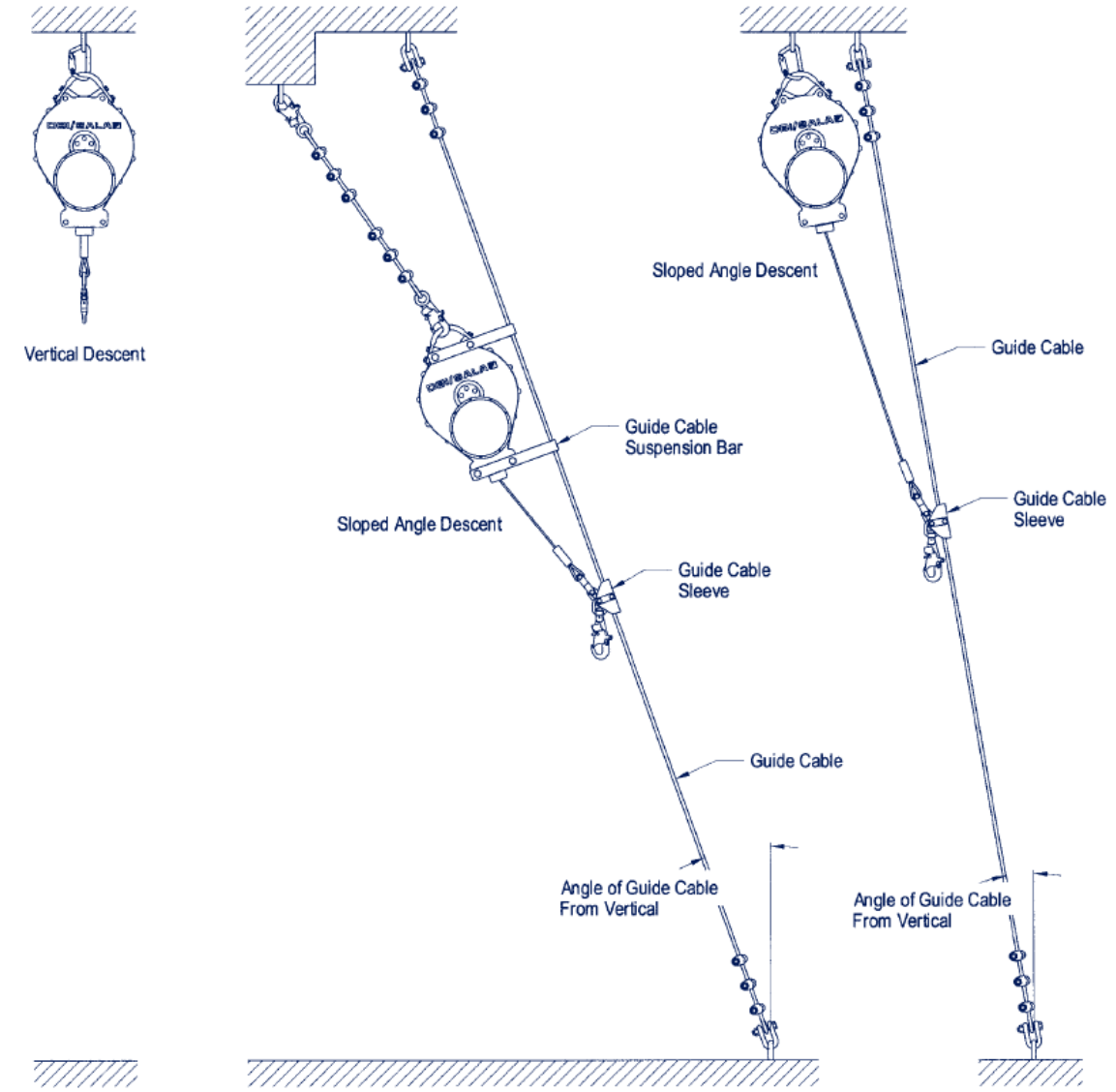


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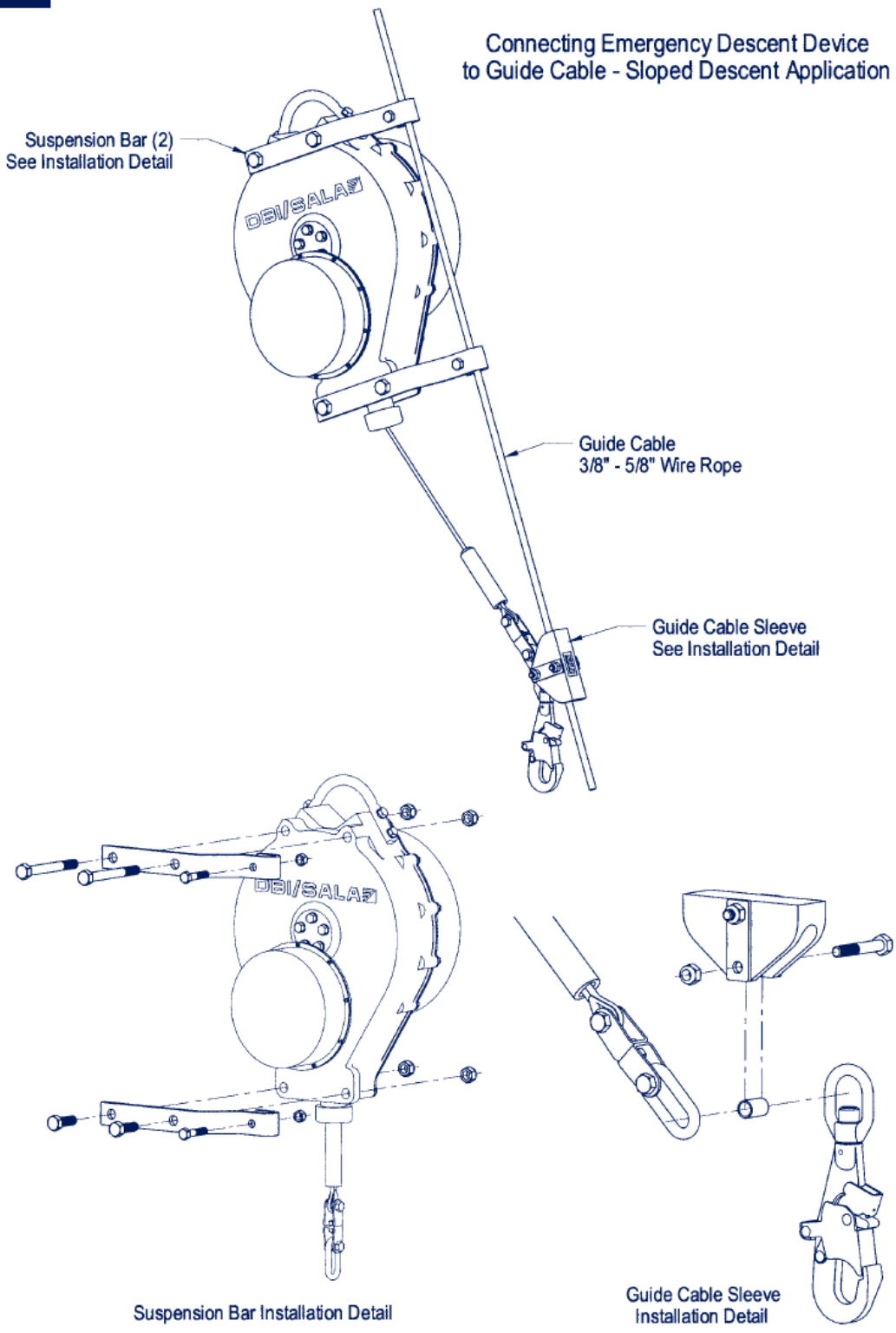
**Figure 5**



## 114.0. Inspection

Weekly:

- A weekly inspection will be completed by a competent person. A formal inspection should be completed if the system parameters are changed, such as after a system is moved, Re-rigged, anchorages moved, guide cable angle changed, etc. Extreme working conditions may require increasing the Inspection frequency. Inspect the Emergency Descent Device according to OEM specifications. Record inspection results in the inspection and maintenance log.

Every two years:

- The device must be sent to an authorized service center for inspection and service.

### 114.1. Inspection Steps

1. Inspect device for loose fasteners and bent or damaged parts.
2. Inspect device housing for distortion, cracks, or other damage. Ensure the anchorage handle is not damaged or distorted.
3. Device lifeline must pull out and retract fully. Inspect wire rope for cuts, kinks, broken wires, corrosion, or severely abraded areas.
4. Device labels must be present and fully legible.
5. Inspect for corrosion on the entire device.
6. Inspect connecting hooks or carabineers for damage, corrosion, and working condition.
7. Inspect Guide Cable Sleeve for excessive wear.
8. Inspect guide cable. Inspect wire rope for cuts, kinks, broken wires, corrosion, or severely abraded areas. If guide cable is damaged do not use the system.
9. Inspect each system component and subsystem according to manufacturer's instructions.
10. Record inspection results.

If inspection reveals an unsafe or defective condition, remove device from service and contact an authorized service center for repair.

Check OEM service manual for maintenance and servicing.

## 115.0. Respiratory Protective Equipment

A drilling operation involves the risk of a sudden and violent release of vapours, including sour gas (H2S) from the well bore and release of contaminants from handling chemicals which are either hazardous to health or potentially fatal. The industry has developed Codes of Practice with respect to the risks associated with this hazard. In general these include the use of detection equipment, respiratory masks and self-contained breathing apparatus. It is the responsibility of each Supervisor and every crewmember to be aware of risks related to respiratory hazards and is prepared to enforce regulations and Company Codes of Practice related thereto.

### 115.1. Self Contained Breathing Units

For rescue and emergency purposes, each drilling rig shall be equipped with no less than two Self-Contained Breathing Units of the type that:

- Provides full-face protection.
- Will maintain positive pressure in the face piece.
- Has a capacity of at least 30 minutes.
- Is fitted with a low air alarm warning.

These Self-Contained Breathing Units Shall Be:

- Stored in a readily accessible location in a manner that will prevent contamination.
- Maintained in a clean and sanitary condition.
- Inspected before and after use.
- Serviced and used in accordance with the manufacturer's specifications.
- Inspected at least once a month by a competent person to ensure that they are in satisfactory working condition.

To provide an effective seal, rig employees shall be clean shaven at all times.

**NOTE:** It is the responsibility of the Rig Manager to ensure all rig employees receive adequate instructions and training in the use of Self-Contained Breathing Units.

### 115.2. Respiratory Masks

When the inhalation of harmful airborne contaminants could be injurious to the health of worker, respiratory masks shall be worn as per the product Material Safety Data Sheet.

An appropriate respirator shall be worn when:

- Mixing caustic.
- Mixing mud additives.
- Spray painting.
- Cleaning boiler flues.
- At any time when exposure to airborne contaminants exists.
- Changing brake pads.

## 116.0. Gas Detectors

Each drilling rig, when working in an area where the existence of H2S is a possibility, shall be equipped with a gas air sampler (e.g. Drager or Gastech) complete with appropriate detection tubes and an electronic detector.

Each crewmember shall receive instructions in the use of gas detection equipment when working in a known H2S area.

Rig personnel working in H2S areas will have completed and passed an H2S Alive course.